

Connection to the Past

Over 92 million acres of longleaf pine originally covered the southeastern United States. This vast pre-settlement forest stretched from Virginia to Texas, containing trees up to 500 years in age. The open savannah-like forest was maintained by lightning ignited wildfires and Native American burning. Today, less than 3 percent of this once vast forest remains in longleaf.

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World War II - 1941

Civil War - 1861

War of 1812

Revolutionary War - 1776

SAP WOOD

Province of Georgia
Established - 1733

Seedling - 1713

Old-growth forests have long held a special place in the hearts of the American people. They are relicts of a time before civilization modified and changed the landscape to fit our modern world. At the same time, they represent man's greed in managing and caring for our natural resources. Old-growth longleaf forest has virtually disappeared from today's landscape with less than a hundredth of 1 percent remaining in the Southeast.

Northern lumber barons descended upon our region during the late 19th Century. They had exhausted and decimated forests in the upper Midwest and Northeast, and were searching for new sources of timber to feed a lumber-hungry America. They found the vast longleaf forests of the Southeast and proclaimed them an inexhaustible resource that would last forever. With their technological efficiency, the forest was virtually gone by the 1920s. What had been considered an inexhaustible resource disappeared in fewer than 40 years.

The old-growth forest was replaced with fast-growing loblolly and slash pine plantations, or slowly changed to a closed canopy hardwood forest in absence of fire. Longleaf

290-year old windblown tree from higher ridge on Mountain Longleaf National Wildlife Refuge.

HEART WOOD

was considered slow growing, difficult to plant and was relegated to history's woodpile. With the help of organizations such as the Longleaf Alliance, longleaf is slowly making a comeback. The few remaining remnants of the forest that once covered 60 percent of uplands on the southeastern coastal plain are rare gifts to future generations.

Today we better understand why longleaf dominated so much of the Southeast. The tree is uniquely adapted to nutrient deficient, droughty soils and a landscape of recurring fire. Under these conditions, longleaf has the ability to dominate the forest indefinitely. Without fire, however, the tree loses its competitive advantage and is replaced with more aggressive hardwoods and faster growing pines. Maintaining and restoring the highly diverse and complex longleaf pine ecosystem can only be accomplished through man's intervention, which requires the return of fire to the forest.

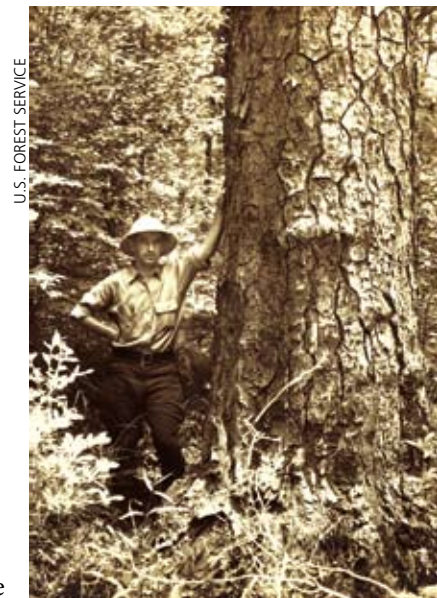
What Is Old-growth?

The definition of old-growth longleaf forest has been debated for years without any one clear answer. Some see the primeval untouched forest that met the first pioneers as the true old-growth forest. Others believe that old-growth begins at forest maturity, which is around 100 years in the longleaf forest. Still others are more liberal and content to define old-growth as containing only a semblance of the former forests. Most biologists, however, do agree that larger intact old-growth forest stands provide greater ecological value than isolated relict trees and small old-growth patches.

The landscape that existed during the 19th Century was far different than the forest we walk into today.

Fires occurred throughout the forest with plants and animals adapting to find a place or advantage in a fire-dominated world.

Longleaf pine was particularly successful in claiming a prominent place in the forest. The highly resinous nature of longleaf is a key characteristic that provides the tree a competitive advantage. As the tree ages, resin slowly fills the central support cells of the tree. The slower the tree grows, the greater the amount of resin or heartwood. A fast-growing longleaf of today or a younger tree in a natural stand may have little or no heartwood. Heartwood develops only through age and time. It also plays an important part in the survival of the forest, facilitating lightning-ignited wildfires, protecting trees from forest insects, creating specialized wildlife habitat and providing strength and durability to survive for centuries.



U.S. FOREST SERVICE

Large longleaf pine in Talladega National Forest-1940.



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Old-growth forest along upper slopes on Mountain Longleaf National Wildlife Refuge.

Red-cockaded woodpeckers excavate nesting cavities into the heartwood of old-growth longleaf pines.



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As old-growth forest disappears from the landscape, the number of plant and animal species the forest can support also decreases. Old-growth contains a more diverse ground cover, older trees, snags and decaying woody material that many wildlife species require to survive.

Groundcover Importance

When entering the longleaf forest we often only see the towering pines. We should turn our attention to the ground cover beneath the pine overstory. In a forest experiencing fires, one of the most diverse plant communities outside of tropical rain forests is found. The number of species in the ground layer exceeds that of even the species-rich tallgrass prairies of the Midwest.

Fires are believed, in large part, responsible for removing the tops of larger plants and allowing a diverse population of smaller plants to flourish on the forest floor. Researchers have identified 389 rare plants associated with the longleaf pine forest, of which 187 are considered vulnerable to extinction.

White-topped pitcher plant is a rare fire-dependent plant of south Alabama longleaf pine savannas and bogs.



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Importance to Wildlife

The pre-settlement old-growth forest was a relatively stable, long-lived ecosystem, where plants and animals were able to specialize and adapt to a variety of unique habitat conditions. Many of these species are endemic to the longleaf forest and found nowhere else on earth. As the old-growth forest disappears, these highly specialized species are also placed at risk. Some are entirely dependent on old-growth, while others benefit from the habitat created in the mature forest. Alabama wildlife species that have suffered from the disappearance of longleaf old-growth forest include red-cockaded woodpecker, Bachman's sparrow, fox squirrel, gopher tortoise and Eastern indigo snake.

The red-cockaded woodpecker is entirely dependant on the presence of old-growth longleaf pines. This highly specialized woodpecker excavates nesting cavities into heartwood infested and softened by fungus. With the disappearance of old-growth, this once abundant southern woodpecker has disappeared from most forests and is classified as endangered. Recovery efforts in today's forests rely on artificial nest box inserts in trees lacking heartwood. The long-term survival of the woodpecker, however, depends on the eventual restoration of old-growth forest.

Plants and animals should not be viewed as individual species, but as living in a web of interconnected relationships. Elimination of one species can have unexpected effects in other parts of the forest. The southeastern fox squirrel provides an example of this complex web of life. Its large body is an advantage for foraging on the open forest floor and feeding on the large longleaf cones. During foraging activities, the fox squirrel spreads fungi spores across the forest floor. These same fungi establish mycorrhizae associations with longleaf pine enabling the tree to extract more water and nutrients from the soil. Some biologists have suggested that the disappearance of the fox squirrel could influence the ability of longleaf pine to dominate the forest. The question arises, "Does the fox squirrel exist in the forest because of longleaf pine or does longleaf pine dominate the forest because of the fox squirrel?" The answer may be either, both, or partly. In this complex web there is no one clear reason for success or failure. A diversity of species, including the fox squirrel, contributes to and supports the success of the entire forest.

Old-growth Today

While old-growth is rare in the Southeast, Alabama seems to have suffered to a greater degree than most states. Until the mid 1990s, the only recognized longleaf old-growth in Alabama was a 60-acre forest near Flomaton. Preserved by one of the early 20th Century timber companies, even this forest eventually succumbed to the chain saw in 2008.

During the 1990s, Auburn University conducted a series of research investigations in the Blue Ridge Mountains of



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Horn Mountain old-growth forest in Talladega National Forest.

east Alabama. Surprisingly, over 100 acres of scattered old-growth forest were discovered on the Fort McClellan military base. These old-growth forests were later included within the newly created Mountain Longleaf National Wildlife Refuge. In recent years, additional relict old-growth forests have been discovered on the nearby Shoal Creek and Talladega Districts of the Talladega National Forest, and on Flagg Mountain in Weogufka State Forest. These remnant old-growth forests range in size from single relict trees to forest stands over 100 acres in size.

Alabama's Blue Ridge Mountains were the last part of the state to be fully exploited for timber. Steep slopes, scattered forest stands and poor quality timber led to a haphazard approach of timber harvest. Higher mountain slopes and isolated ridges proved difficult to access, some escaping the logger's saw.

Threats to Forest

The greatest threat and impact to longleaf pine forest has been the disappearance of fire, particularly during the 20th Century. Smokey Bear was instrumental in teaching our parents and grandparents of the danger of fire to the forest. Longleaf pine, however, requires fire to expose mineral soil for seedling regeneration, and sunlight for further growth. As fire disappeared or occurred less frequently, seedlings and younger trees disappeared from the forest. Fire-sensitive hardwoods encroached upon these once open forests and created a closed canopy forest that doomed many of these lands to a new and different forest.

Old-growth forest, however, is burdened with an additional threat. The root systems of longleaf are well adapted to poor soils. Root systems extend deep in the earth searching for scarce water and nutrients. However, without fire the soils

surrounding the trees can dramatically change. Pine needles and cones beneath the tree are no longer consumed by fire. This accumulation of organic matter continues to build beneath the tree as the years pass. The aging longleaf eventually recognizes that nutrients and water can more easily be found in the organic layer immediately beneath the tree. Over decades, the tree directs its roots into this nutrient rich soil. When fire reenters this forest, even through a well-intended prescribed burning program, the organic layer often burns, consuming much of the tree's root system. The resulting consequences are often the death of the tree. Land managers today are searching for techniques to re-establish fire safely in these old-growth forests that have been without fire for decades.



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Prescribed burning is critical in restoring longleaf forests.

Future Importance

Old-growth provides our only link to the forest that greeted the first pioneers. As relicts of the original forest, they may well hold secrets for restoring and maintaining future forests. As longleaf restoration progresses, particularly on federal and state lands, these reservoirs of biodiversity are expected to play an important part in restoring plant and animal species to a broader forest landscape.

Visit Old-growth Forest

One of the more interesting old-growth forests can be seen on Horn Mountain in the Talladega National Forest. This 50-acre forest stand can be visited by traveling 9.1 miles east of Talladega on Alabama Route 77, turning right on Forest Service Road 600-1, and following the road 3.3 miles to the microwave tower on Horn Mountain. The Forest Service road is rocky but passable with a two-wheel drive vehicle. Park at the entrance to the transmission tower and walk 100 yards east on the Pinoti Trail. The trail passes through a beautiful stand containing trees over 200 years old.

A second old-growth stand on Mountain Longleaf National Wildlife Refuge near Anniston is more accessible, but closed to the public at this time. This stand is easily accessible from Bain's Gap Road. Contact the refuge to determine the opening date or the possibility of joining tours of the stand. 

For More Information

To learn more about the mountain longleaf forests of east Alabama or old-growth longleaf forests visit the following Web sites:

Talladega National Forest
www.fs.fed.us/r8/alabama

Mountain Longleaf NWR
www.fws.gov/southeast/mountainlongleaf

Longleaf Alliance
www.longleafalliance.org